REMARKS

Pursuant to the Office Action dated April 21, 2004, Claims 1, 4, 8, 12, 16 and 24, 53-56, 58-62 and 64 are rejected under 35 USC 103(a) as being unpatentable over U.S. Patent No. 6,066,547 to Maekawa in view of U.S. Patent No. 5,953,597 to Kusumoto et al. This rejection was made FINAL. The Examiner contends that one having ordinary skill in the art would have been motivated to modify the process of Maekawa by performing the laser annealing using the second harmonic of a YAG laser in place of an excimer laser because the second harmonic has a sufficient absorption coefficient to the amorphous semiconductor film and can crystallize the semiconductor film with a high degree of energy efficiency.

Applicants believe that there is no motivation or suggestion to combine Maekawa and Kusumoto et al. The Examiner contends that the motivation to combine is that both an excimer laser and a second harmonic YAG laser are art-recognized equivalents used in photo-annealing methods to crystallize amorphous silicon (Kusumoto et al. – column 2, lines 50-59). However, in column 2, lines 50-59 of Kusumoto et al. there seems to be only a disclosure that various excimer lasers such as a KrF excimer laser, ..., and a second harmonic component (wavelength of 532 mm) of a ND:YAG,... may be used. Applicants believe that this description does not mean that the two types of laser beams are art-recognized equivalents. Kusumoto et al. does not teach crystallization of semiconductor film with two steps of heat treatment and laser annealing along with the application of the several types of laser beams. Even if the above two types of laser annealing were equivalent **in one step of crystallization of the semiconductor film by laser annealing,** as shown in Kusumoto et al., this is not true **in case of performing the laser annealing after partial crystallization (two steps of crystallization)**. In other words, the laser beam having a wavelength from 360 nm to 650 nm can crystallize efficiently with the remaining

continuous crystalline region in a polycrystalline silicon film crystallized by heat treatment (see page 19, lines 8-12). Here, the continuous crystalline region is highly useful due to its greater possibility of obtaining a TFT with high electric characteristics (see page 18, lines 14-16), while laser annealing using an excimer laser makes the polycrystalline silicon film obtained by the heat treatment melt so that the unclear grain boundaries of the crystalline grains formed by the heat treatment is eliminated. Therefore, Applicants believe that the motivation contended by the Examiner is not appropriate, since the excimer laser and the second harmonic component of Nd: YAG laser are not equivalent in laser annealing after partial crystallization of semiconductor film.

Also, even if there were motivation to combine Maekawa and Kusumoto et al., Applicants believe that there is obtained an **unexpected result,** which is not merely a optimization, from a laser beam having a wavelength from 360 nm to 650 nm compared to prior art on crystallizing amorphous regions in partially crystallized semiconductor film.

Additionally, claims 20, 57 and 63 are rejected under 35 USC 103(a) as being unpatentable over Maekawa in view of Kusumoto et al. and further in view of Ohtani et al. Applicants traverse this rejection for reasons similar to those set forth above.

Respectfully submitted,

Stephen B. Heller
Registration No.: 30,181

COOK, ALEX, McFARRON, MANZO
CUMMINGS & MEHLER, LTD.
200 West Adams Street, Suite 2850
Chicago, Illinois 60606
(312)236-8500